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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/919,149	07/31/2001	N. Lee Rhodes	10013112-1	3173

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EXAMINER

CHEA, PHILIP J

ART UNIT	PAPER NUMBER
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2153

DATE MAILED: 11/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/919,149	Applicant(s) RHODES, N. LEE	
	Examiner Philip J Chea	Art Unit 2153	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 7/31/01.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2/24/03</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims 1-20 have been examined.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 2, 3 and 5 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 recites the limitation "the incoming data" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim 3 rejected by virtue of being dependent on a rejected claim.

Regarding claim 5, the phrase "high data rate" renders the claim indefinite because it is unclear what limitation(s) are included.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 4-8, 16, 18, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Claffy et al. ("Application of Sampling Methodologies to Network Traffic Characterization).

As per claims 1, 16, and 20, Claffy et al. disclose a system for real-time analyzing of a stream of data, as claimed, comprising:

- receiving the stream of data (see heading 7 Application of methodology bottom of page to 7.1 Bin selection, where trace implies receiving a stream of data)

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- determining a data distribution representative of the stream of data, including creating data bins having exponentially increasing sizes (see figures 6 and 7);
- allocating statistical representation of the data in the data bins (see figures 6 and 7, which are graphs of phi-value scores); and
- using the data distribution to analyze the stream of data (see heading 7.2 Sampling fraction and method, paragraph 1, lines 8-19, where analysis of the system is done).

As per claim 4, Claffy et al. further disclose querying a data source and collecting the stream of data from the data source in response to the query (see heading 3 Measurement methodology, paragraph 1, where querying is implied by investigating the traffic behavior).

As per claim 5, Claffy et al. further disclose defining the data stream as a continuous stream having a high data rate (see heading 1 Introduction, paragraph 1, where high-speed = high data rate).

As per claim 6, Claffy et al. further disclose defining the stream of data as having only positive values (see figure 6, and figure 7, where no negative data values are shown).

As per claim 7, Claffy et al. further disclose defining the data stream as having an unknown lowest value and an unknown upper value (see heading 5.1 Theoretical sample size for means, where a random sampling implies that there is no known lowest value and upper value).

As per claim 8, Claffy et al. further disclose defining a bin order and storing the bin order in memory (see figure 6 and figure 7, where a bin order is shown from smallest to largest). *Claffy et al. does not expressly disclose a memory, however, it is implied, if not inherent, that there is a memory for the bin data to be stored.*

As per claim 18, Claffy et al. further disclose the data being usage data (see heading 1 Introduction, where characterizing traffic on wide area networks is considered usage data on the network).

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5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Claffy et al.

("Application of Sampling Methodologies to Network Traffic Characterization").

As per claim 9, although Claffy et al. show substantial features of the claimed invention (discussed above), it fails to disclose storing the data bins in an array structure in memory. Nonetheless, storing data in an array structure is well known in the art and would have been an obvious modification of the system disclosed by Claffy et al. due to official notice.

A person having ordinary skill in the art would have readily recognized the desirability and advantages of modifying Claffy et al. by storing the data bins in an array structure in memory, in order to allow a simple method of storage providing $O(n)$ sequential searching ability.

As per claim 19, although Claffy et al. show substantial features of the claimed invention (discussed above), it fails to disclose ordering the data bins in an array structure. Nonetheless, placing data in an array structure to order them is well known in the art and would have been an obvious modification of the system disclosed by Claffy et al. due to official notice.

A person having ordinary skill in the art would have readily recognized the desirability and advantages of modifying Claffy et al. by storing the data bins in an array structure in memory, in order to allow a simple method of storage providing $O(n)$ sequential searching ability.

6. Claims 2, 3, 10-15, and 17, rejected under 35 U.S.C. 103(a) as being unpatentable over Claffy et al. as applied to claims 1 and 16 above, and further in view of Wright ("A Simple Hash Table Implementation").

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As per claims 2 and 17, although the system disclosed by Claffy et al. show substantial features of the claimed invention (discussed above), it fails to disclose using a set of keys determined from a function.

Nonetheless, these features are well known in the art and would have been an obvious modification of the system disclosed by Claffy et al., as evidenced by Wright.

In an analogous art, Wright discloses a means for indexing an item in a data structure using a key determined from a logarithmic function (see Wright page 2, line 2 of code).

Given the teaching of Wright, a person having ordinary skill in the art would have readily recognized the desirability and advantages of modifying Claffy et al. by employing a key hashing means, such as disclosed by Wright, in order to quickly access an element in a large portion of data (see Wright page 2, 3rd paragraph below code).

In considering claim 3, Claffy et al. fails to disclose, as claimed, wherein determining the set of keys includes:

- defining a resolution factor as a number of data bins desired per power of the chosen logarithm base; and
- using the resolution factor to determine the set of exponentially increasing intervals.

Although the system disclosed by Claffy et al. shows substantial features of the claimed invention (discussed above), it fails to disclose defining a resolution factor and using the resolution factor to determine the set of increasing intervals.

Nonetheless, these features are well known in the art and would have been an obvious modification of the system disclosed by Claffy et al., as evidenced by Wright.

In an analogous art, Wright discloses a means for indexing an item in a data structure using a key determined from a logarithmic function (see Wright page 2, line 2 of code). Further, implying that the resolution factor is already known, which determines the set of intervals.

Given the teaching of Wright, a person having ordinary skill in the art would have readily recognized the desirability and advantages of modifying Claffy et al. by employing a means of defining a resolution factor as a number of data bins, and using the resolution factor to determine the set of

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exponentially increasing intervals, in order to adjust the number of data bins according to the desired statistical testing parameters.

As per claim 10, although the system disclosed by Claffy et al. shows substantial features of the claimed invention (discussed above), it fails to disclose computing a bin key associated with a data value, defining an array index having an array of index values wherein each array index value is associated with a data bin; and determining the data bin using the array index and bin key.

Nonetheless, these features are well known in the art and would have been an obvious modification of the system disclosed by Claffy et al., as evidenced by Wright.

In an analogous art, Wright discloses a means for indexing an item in a data structure using a key determined from a logarithmic function (see Wright page 2, line 2 of code).

Given the teaching of Wright, a person having ordinary skill in the art would have readily recognized the desirability and advantages of modifying Claffy et al. by employing a key hashing means, such as disclosed by Wright, in order to quickly access an element in a large portion of data (see Wright page 2, 3rd paragraph below code).

In considering defining an array index and determining the data bin associated with the data value, as discussed previously storing data in an array is well known in the art and would have been an obvious modification of the system disclosed by Claffy et al.

A person having ordinary skill in the art would have readily recognized the desirability and advantages of modifying Claffy et al. by storing the data bins in an array structure, in order to allow a simple method of storage providing $O(n)$ sequential searching ability.

As per claim 11, Claffy et al in view of Wright disclose updating the value stored in the data bin (see figures 6 and 7, where data is seen distributed among the bins implying that the data was being updated during the sampling time).

As per claim 12, Claffy et al. does not expressly disclose wherein if a data bin cannot be determined, extending the array structure to accommodate the data value.

Nonetheless, extending the array structure by utilizing a dynamic array is well known in the art and would have been an obvious modification of the system disclosed by Claffy et al.

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A person having ordinary skill in the art would have readily recognized the desirability and advantages of modifying Claffy et al. by using a dynamic array structure, in order to accommodate an unknown amount of data, while still providing an $O(n)$ sequential searching ability.

As per claim 13, although the system disclosed by Claffy et al. show substantial features of the claimed invention (discussed above), it fails to disclose indexing the bins using a set of keys.

Nonetheless, these features are well known in the art and would have been an obvious modification of the system disclosed by Claffy et al., as evidenced by Wright.

In an analogous art, Wright discloses a means for indexing an item in a data structure using a key (see Wright page 2, 2nd paragraph below code, where a search key is used to go straight to an element of an array).

Given the teaching of Wright, a person having ordinary skill in the art would have readily recognized the desirability and advantages of modifying Claffy et al. by employing a key hashing means, such as disclosed by Wright, in order to quickly access an element in a large portion of data (see Wright page 2, 3rd paragraph below code).

As per claim 14 and 15, although the system disclosed by Claffy et al. show substantial features of the claimed invention (discussed above), it fails to disclose defining the array structure as a tree array structure.

Nonetheless, these features are well known in the art and would have been an obvious modification of the system disclosed by Claffy et al., as evidenced by Wright.

In an analogous art, Wright discloses a means for indexing an item in a data structure using a key (see Wright page 3, 2nd paragraph below code, where a search key is used to go straight to an element of an array). Wright further discloses using a binary tree to store the data instead of an array.

Given the teaching of Wright, a person having ordinary skill in the art would have readily recognized the desirability and advantages of modifying Claffy et al. by employing a tree structure to store data, such as disclosed by Wright, in order to quickly access an element in a large portion of data where the amount of data is not known (see Wright page 2, 4th paragraph below code).

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In considering claim 15, Claffy et al. fails to disclose creating a data bin if a data bin does not exist. However, although not expressly disclosed, it is implied that a data bin can be created in the tree because Wright discloses that a tree structure is beneficial if the amount of data is not known implying that the tree is dynamic.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Caccavale, Frank Samuel	US 5819033 A
Gibbons, Phillip B. et al.	US 5870752 A
Schmuck, Frank B. et al.	US 6032216 A
Rosenberg, Jonathan David	US 6253242 B1
Tams, Jonathan et al.	US 6279037 B1
Aboulnaga, Ashraf et al.	US 6460045 B1
Cookmeyer, II, Eugene N. et al.	US 6526044 B1

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Philip J Chea whose telephone number is 703-605-1202. The examiner can normally be reached on M-F 7:00-4:30 (2nd Friday Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Burgess can be reached on (571) 272-3949. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Philip J Chea
Examiner
Art Unit 2153

PJC

Bradley Edelman
Art Unit 2153